ADP PLANNING CONFERENCE RECOMMENDATIONS

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By

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INTRODUCTION

I will provide today some comments on the recommendations set forth

at the Airlie House Conference. I want to commend all of you who

participated in that Conference. This Conference concentrated con-

siderable expertise in one place which hopefully will be of benefit in

resolving the issues addressed at the Conference. The open discussion

that you held at Airlie House and are continuing in your meetings and

in this present session, is a hallmark of open government. It is repre-

sentative of the true spirit of the Brooks Act and its intent in how the

Federal government could operate.

Specifically, I will address only the five areas pertaining to the

National Bureau of Standards (NBS). These areas are:

1. Computer Software

2. Standards for Compilers

3. Analysis of New ADP Products

4. Early Information on ADP Procurements

5. Standards Enforcement

In each case, I will state your recommendation as I understand it from

the draft proceedings and then indicate our initial reactions to it.

COMPUTER SOFTWARE

>"NBS should provide technical support to GSA in the
>operation of the software exchange program."

A government-wide index of sharable programs is an NBS responsibility

under the OMB Policy Guidance for the Brooks Act, and now has come to

fruition through the Software Summary Form FIPS PUB 30, developed by NBS

and FIPS Task Group 14 (Documentation for Information Processing Systems).

GSA has worked effectively with us, by agreeing to take on the day-to-day

operational tasks and by promulgating this year the necessary FPMR amendment

to assure that sharable programs are documented and reported. NBS will

continue to advise GSA on the operational aspects and to develop further

plans and documentation standards to support improvements of the exchange.

However, as a cautionary note, based upon the past experience of

NASA's COSMIC and NTIS, there has been very little evidence of the value

of software exchange even though GAO and others frequently cite the potential

needs and benefits for such sharing. Accordingly, I feel that we (NBS)

should closely follow the GSA sharing program to determine if software

is a sharable resource and be able to separate facts from myths. We should,

in cooperation with GSA, begin to provide for the collection of pertinent facts

concerning the software exchange program.

You have further recommended to GSA that the ADP fund be used to

validate and maintain a small number of programs of wide interest. Indeed,

this may be the most expeditious avenue to obtain the resources for NBS to

carry out these responsibilities as directed by the OMB Guidance for the

Brooks Act. I believe that two priority areas to pursue in this way would

be data base management software and data element directory software. We

have already performed the functional analyses that are the essential first

step toward the validation routines.

> *"NBS should develop standards and guidelines to facilitate*
> *sharing of software among agencies."*

Improved interchange of software and data has always been a major

goal of the FIPS program. Standardization of programming languages, software

documentation, and data files are involved, and you have made specific recommen-

dations in these areas that I will discuss later. There is no lack of ideas

in other areas that need much more work that we presently have resources to

carry out. For instance, the need for standard user and network protocols

is among those we have identified in the past and are now pursuing, but

only in the minimal scope that our present resources allow. A specific

identification of the impact and urgency of these needs would be helpful

support this this group might provide.

> *"Develop standards for the documentation of software."*

A comprehensive guideline for software documentation, FIPS PUB 38,

has been published by NBS this year and with further experience and refine-

ment can serve as the basis for Federal standards. The effort of the FIPS Task

Group on Documentation is continuing, with the current goal of extending the

present software documentation guideline to meet other documentation needs

in the software life cycle.

> *"Develop standards for the design of portable software."*

The issue of software design for portability certainly requires further

study and definition of feasible standards. You can see that application-

specific standards are involved, e.g., standard algorithms for computing

mathematical functions or standard functional modules for payroll packages.

The user community must be involved directly in these standards, in order to

guide the functional requirements that are imposed. NBS has been instru-
mental in progress in those applications areas where the concerned user
community has organized itself to effectively use standards assistance. For
example, the medical community has worked with NBS on selected standards for
their needs (MUMPS). Certainly, the lack of cohesion and concerted action
among users is a major hindrance to overall progress.

> "There should be a recognized, permanently staffed central
> agency to coordinate and promote software sharing among
> agencies."

I doubt that there is now the needed adequate technical base for any
agency to accomplish the goal as implied here. We need more information
exchange about sharable resources and successful applications: this should
be vigorously pursued. There should also be increased effort to identify
common needs that would support government-wide contract arrangements for
use of selected packages, such as data base management packages and software
production tools. But an agency decision to use an existing software system
for a new application rather than develop new software requires a complex
cost-benefit analysis.

Undoubtedly there also will be some compromise in the functional specifi-
cations. This analysis and decision making is best accomplished by the using
agency; but the general intent of this recommendation deserves further review.
We need more refined ideas about the role and authorities of the central
agency. As an information channel, it is feasible and desirable; as a
central design authority on agency applications, it is prohibited by the
Brooks Act and also is of dubious feasibility.

STANDARDS FOR COMPILERS

> *"NBS should collaborate with GSA on a plan to require*
> *vendors to restrict the use of standard assembly*
> *language supersets of extensions to compiler capabilities,*
> *rather than through changes to source programs."*

We interpret this to mean you recommend that Federal agencies should be

restricted from the use of vendor supplied compilers that represent the

Federal standard with non-standard extensions.

We cannot accept this view without some qualification. For instance,

vendor extensions beyond a current standard are the only way to gain

experience on major new capabilities needed in the future standard language.

We already strongly need language extensions to interface with data

management systems, to provide debugging aids, to assist in program documenta-

tion, etc. Thus, a Federal standard which prohibited any extensions would

freeze Federal users into the current state of the art, and prevent them

from effectively using the exciting capabilities of networks, micro-processors,

and integrated software sytems. At the same time, we must agree also that

some vendor extensions are trivial, serving only as "syntactic sugar" to

make a sale to the undiscerning user. Rather than spend extensive resources

reviewing every compiler for the latter, it is better to have a standard tool

which restricts use of these useless features in day-to-day programming. The

new COBOL standard, FIPS 21-1, provides this tool in the flagging requirement

that NBS has added beyond the national standard. We have developed separate

analyzers for FORTRAN which can perform the same function, and have a similar

effort underway for COBOL. No new effort seems to be required to fulfill

this recommendation.

ANALYSIS OF NEW ADP PRODUCTS

> "NBS should be provided funding for analysis and dissemination
> of information on new ADP products and services."

We believe our role relative to this recommendation is to provide the

technical basis to other agencies to evaluate new products and services in

the context of their own application. In fact, NBS has been doing this on an

ad hoc basis to the extent that we felt that it was possible. We need

resources to do it on a much larger scale. Until there are resources for

a comprehensive program, we cannot initiate analyses of new ADP products and

services with our directly appropriated funds. Let me cite one specific

example of how we have been responsive in this area to the extent resources

have permitted:

Our FIPS Task Group 21, Interface Standards and Multivendor Installa-

tions, is considering various aspects of an information service on hardware

and software components that are acquired for Federal use through the systematic

filing of product reports prepared by the buying agencies. The legal aspects

of this type of service are being addressed, due to the sensitive nature of the

information involved and its availability under the provisions of the Freedom

of Information Act.

EARLY INFORMATION ON ADP PROCUREMENTS

> "NBS is a possible source of independent opinion for
> earlier information to Congress or new systems pro-
> curements."

I assume from the discussion as documented in the Airlie House proceedings

that this recommendation is in reference to technical information concerning

ADP procurements. It is interesting that one of the versions of the Senate Bill

for the privacy protection, namely S.3418, had a provision similar to your

recommendation. Specifically, prior to creation or substantial alteration of an

information system, agencies would have submitted a report to the Privacy Pro-

tection Commission, to GSA, and to Congress. One inclusion in this report would

have been "a statement of the hardware and software features which would

be required to protect security of the system and confidentiality of

information" and "the steps taken by the agency to acquire such features in

their systems, including a description of consultations with representatives

of the National Bureau of Standards."

As you know this requirement and NBS responsibility were not included

in the Privacy Act of 1974. When specific technical questions as in the

case of safeguards for privacy protection can be identified, this service

of providing advice regarding ADP proposals to assist the Federal agencies,

as well as being responsive to Congressional requests, does seem appropriate

for NBS.

STANDARDS ENFORCEMENT

> "There should be a concomitment effort on enforcement
> of standards including enforcement in procurements."

There has been long-standing confusion and uncertainty associated with

the lack of any compliance mechanism in the implementation of Federal

Information Processing Standards (FIPS) within the Federal government.

This disquieting situation has existed since the first FIPS standard was

issued in 1968. The Brooks Act, which established the FIPS program, does

not address the issue of mandatory compliance or enforcement, nor do the

OMB policy guidance papers or Executive Orders issued since 1965. Its

only direct mention is in a letter dated December 15, 1966 from the Acting

Director of OMB to the Secretary of Commerce in which NBS was directed to,

among other things, "to the extent feasible and desirable, develop and

recommend means for measuring compliance with Federal standards."

Since 1971, NBS has continually cited the confusion surrounding the

lack of an explicit compliance mechanism as a signficant factor in the

degradation of the creditability and effectiveness of the FIPS program--.a

deficiency which impacts on both NBS and the Secretary of Commerce.

Individuals within OMB have in 1976 expressed to NBS the informal view that

Executive Order 11717 dated May 9, 1973, gives the Department of Commerce

all needed authority to enforce compliance or use, as appropriate, with its

FIPS standards and guidelines. No formal assurance of this has been given;

presently, by memorandum dated April 23, 1976, NBS has asked the staff of the

DOC General Counsel to resolve whether the Secretary of Commerce has the

legal authority informally intimated by OMB staff.

Certainly, any Federal standards program intended to meet legislated

requirements, such as those of the Privacy Act of 1974, needs an accompanying

explicit compliance and enforcement mechanism. NBS has been keenly aware

of, and has many times documented, its concern over the resulting lack of

effectiveness within the Federal government of its FIPS program.

When we have determined the legal authority of the Secretary of Commerce,

NBS will either undertake the establishment of an adequate compliance mechanism

or we will formally notify OMB of the need for clarifying policy guidance.

CONCLUSION

Your recommendations are important to us as well as to the entire

Federal ADP community. I want to emphasize the continued NBS support of

your efforts and request your continuing advice to assist in the formulation

of our program.